

REMARKS

Reconsideration and allowance of the above-identified Application in view of the above amendments and the following remarks are respectfully requested.

Claims 1, 3-9, 17-19 and 21-30 are pending in the Application. Claims 1, 6, 8, 9, 17-19 and 21 have been amended, claims 11-16 which were previously withdrawn from consideration are canceled herein without prejudice or disclaimer of the subject matter contained therein and claims 22-30 are added herein. Support for the added claims can be found throughout the initial disclosure, for example, in the detailed description of the invention.

Withdrawal of Finality of Office Action

The Examiner states the Office Action is made final because Applicants amendment(s) necessitated the new ground(s) of rejection. Applicants note, however, that the previous amendments were made in response to only § 112, first paragraph and second paragraph rejections.

According to MPEP 2143.03, "If a claim is subject to more than one interpretation, at least one of which would render the claim unpatentable over the prior art, the examiner should reject the claim as indefinite under 35 U.S.C. 112, second paragraph and should reject the claim over the prior art based on the interpretation of the claim that renders the prior art applicable."

Furthermore, according to MPEP § 706.07, "A second or any subsequent action on the merits in any application or patent involved in reexamination proceedings should not be made final if it includes a rejection, on prior art not of record, of any claim amended to include limitations which should reasonably have been expected to be claimed. See MPEP § 904 *et seq.* For example, one would reasonably expect that a rejection under 35 U.S.C. 112 for the reason of incompleteness would be replied to by an amendment supplying the omitted element." (emphasis added).

Because the Examiner did not reject the claims in the prior Office Action on the grounds that they are unpatentable over a prior art reference, Applicants respectfully submit

that the finality of the Office Action is premature and respectfully request that the finality of the Office Action be withdrawn and this amendment be entered. See MPEP § 706.07(e).

Claim Rejections – 35 USC § 102

Claims 1, 3-4, 6-8 and 17-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ivankovits et al. (U.S. Patent No. 5,213,621).

Claim 1 has been amended to recite, *inter-alia*, “forming a material including a metal on a wall inside the chamber; heating the wall; vaporizing the cleaning agent comprising one of a carboxylic acid and a derivative of carboxylic acid; supplying the vaporized cleaning agent into the chamber; forming a metal complex of the metal and the cleaning agent on the heated wall by contacting the vaporized cleaning agent with the material; subliming the metal complex on the heated wall under a reduced pressure; and exhausting the sublimed metal complex from the chamber.”

Claim 17 has been amended to recite, *inter-alia*, “forming a material including copper on a wall inside the chamber; heating the wall; vaporizing the cleaning agent comprising one of a carboxylic acid and a derivative of carboxylic acid; forming a copper complex on the heated wall by contacting the vaporized cleaning agent with the material including copper; subliming the copper complex with a heat source; and exhausting the sublimed copper complex from the chamber.” By using the method of claim 1 or the method of claim 17, the material including the metal (for example, copper) on the wall inside the chamber can be removed efficiently. As a result, the wall inside the chamber is cleaned.

Ivankovits et al. discloses a process for cleaning metal-containing contaminants from a surface of a substrate of the type used in fabricating integrated circuits and semiconductors by using a cleaning agent, for example trifluoroacetic acid. Ivankovits et al. does not disclose, teach or suggest heating a wall inside a process chamber on which a material including a metal is formed, forming a metal complex on the heated wall, subliming the metal complex on the heated wall and exhausting the metal complex to clean the wall inside the chamber. Ivankovits et al. is not concerned about cleaning a wall of a process chamber but merely concerned about cleaning a surface of a substrate.

The Examiner contends that cleaning the treatment chamber is inherent in Ivankovits et al. process because the substrate is disposed in the process chamber provided that the

chamber can be brought to the appropriate cleaning process temperature. Applicants respectfully disagree. Ivankovits et al. does not form a material including a metal on a wall inside the process chamber to subsequently exhaust a sublimed metal complex formed by the contact of a cleaning agent with the material on the wall.

Furthermore, according to MPEP 2112, "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). In this case, Ivankovits et al. clearly lacks any suggestion that a wall in the process chamber of Ivankovits et al. can be cleaned when the substrate is cleaned.

Consequently, for at least these reasons, Applicants respectfully submit that claims 1 and 17, and claims 3-4, 6-8, 18 and 19 which depend from either claim 1 or claim 17, are patentable. Therefore, Applicants respectfully request that the rejection of claims 1, 3-4, 6-8 and 17-19 under § 102(b) over Ivankovits et al. be withdrawn.

Claim Rejections – 35 USC § 103

Claims 5, 9 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ivankovits et al. (U.S. Patent No. 5,213,621).

Claim 5 depends from claim 1 and claim 21 depends from claim 17. Therefore, for at least the reasons provided above with regard to claims 1 and 17, Applicants respectfully submit that claims 5 and 21 are patentable over Ivankovits.

Claim 9 recites, *inter-alia*, "forming a material including a metal on a wall inside the chamber; heating the wall; vaporizing a the cleaning agent comprising one of a carboxylic acid and a derivative of a carboxylic acid; supplying the vaporized cleaning agent into the chamber; forming a metal complex of the metal and the cleaning agent on the heated wall by

contacting the vaporized cleaning agent with the material; subliming the metal complex on the heated wall under a reduced pressure; repeating said vaporizing the cleaning agent, repeating said supplying the vaporized cleaning agent, repeating said forming the metal complex, and repeating said subliming the metal complex; and exhausting the sublimed metal complex from the chamber.”

As discussed above with regard to claim 1, Ivankovits et al. does not disclose, teach or suggest forming a material including a metal on a wall inside the chamber, heating the wall, vaporizing the cleaning agent comprising one of a carboxylic acid and a derivative of a carboxylic acid, supplying the vaporized cleaning agent into the chamber, forming a metal complex of the metal and the cleaning agent on the heated wall by contacting the vaporized cleaning agent with the material and subliming the metal complex on the heated wall under a reduced pressure. Furthermore, as conceded in the Office Action, Ivankovits et al. does not disclose or suggest repeating the vaporizing the cleaning agent, repeating the supplying the vaporized cleaning agent, repeating the forming the metal complex, and repeating the subliming the metal complex.

The Examiner contends that it would have been obvious to one of skill in the art to repeat the steps to obtain optimum result. Applicants respectfully disagree. There is no suggestion in Ivankovits et al. that the steps for removing the metal-containing contaminants from the substrate are repeated to obtain optimum results.

Therefore, for at least these reasons, Applicants respectfully submit that claim 9 is patentable over Ivankovits et al. Thus, Applicants respectfully request that the rejection of claims 5, 9 and 21 under § 103(a) over Ivankovits et al. be withdrawn.

Claims 22-30 have been added. Claims 22-30 depend from either claim 1, claim 9 or claim 17. Therefore, for at least the reasons presented above with respect to claims 1, 9 and 17, Applicants respectfully submit that claims 22-30 are patentable.

CONCLUSION

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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